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**ENVIRONMENTAL**



# **Arboricultural Impact Assessment**

***Birchwood High School, Parsonage  
Lane, Bishops Stortford CM23 5FA  
(Access Options)***

Client Name: Birchwood High School

Project Number: P3105.3.0

Date: 16 March 2020

**ENABLING DEVELOPMENT**

<b>Client:</b>	Birchwood High School
<b>Agent:</b>	Wilby and Burnett
<b>Site:</b>	Birchwood High School, Parsonage Lane, Bishop's Stortford CM23 5B
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## 1 Report Summary

This Arboricultural Feasibility Report provides advice for consideration when designing development proposals, to minimise the impact on trees within and adjacent to the site. This report has been prepared based on a survey of all trees with potential to be affected by development, and upon review of the preliminary proposals for the site. A full Arboricultural Impact Assessment (AIA) will be required for submission with the planning application.

This report focusses on the potential impacts of options put forward for new access serving internal development. The assessment has been made upon a combination of the original survey information and a second visit to assess woodland further south, not previously surveyed.

From a desk study, this woodland is subject to a Tree Preservation Order.

Six potential access options have been assessed with respect to the site's tree cover. Of these, one option is favoured over all others (3141 SD02.5) as it has the lowest impact on trees. Two options (3141 SD02.3 and 3141 SD02.6) have been recommended for rejection due to the high impact arising from any option that passes through the southern woodland block.

## Contents

1	Report Summary.....	2
2	Introduction.....	5
2.1	Brief and Proposals.....	5
2.2	Documents and Information.....	5
2.3	Survey Details and Constraints.....	5
3	Site and Surrounding Area Context.....	7
3.1	Site Description.....	7
3.2	Soil Assessment.....	7
3.3	Existing Tree Stock Summary.....	7
4	Statutory Tree Protection.....	9
5	Preliminary Development Recommendations.....	10
5.1	Tree Removals and Reduction.....	10
5.2	Development Proposals.....	10
5.3	Compatibility with Recommendations.....	11
6	Tree Protection and Arboricultural Methodology.....	12
6.1	Guidance Utilised.....	12
6.2	Tree Works.....	12
6.3	Tree Protection.....	12
6.3.1	Protective Fencing.....	12
6.3.2	Ground Protection.....	13
6.3.3	Inspection.....	13
6.4	Construction Access / Materials Storage.....	13
6.5	Provision of New Hard Surfaces and Foundations Within RPAs.....	13
6.6	Service Provision.....	14
6.7	New Planting.....	14
6.8	Schedule of Works and Supervision.....	15
6.9	General Guidance.....	15
7	References.....	16

Appendix 1 Explanatory Notes for Terms Used in Appendices 2, 3 & 4

Appendix 2 Tree Photographs

Appendix 3 Tree Survey Table

Appendix 4 Tree Constraints Plan

Appendix 5 Tree Protective Fencing Specification

Appendix 6 Ground Protection Details

Appendix 7 Reduced-Dig Construction Details

## 2 Introduction

### 2.1 Brief and Proposals

agb Environmental Ltd was commissioned by Wilby and Burnett on behalf of Birchwood High School to undertake an Arboricultural Survey at Birchwood High School, Parsonage Lane, Bishop's Stortford CM23 5B to inform the feasibility of new access provision for school development. The purpose of the survey was to identify:

- Age class, condition, dimensions, general health and Root Protection Area (RPA);
- Constraints and potential tree removals in respect of the proposed layout; and
- Preliminary details on the methodology and means of protecting retained trees.

### 2.2 Documents and Information

The following documents were utilised in the preparation of this report:

- SD Drawing set 02.07.18 - Topographical Survey and Site Layout
- Drawings 3141 SD02.1-6 Proposed Site Layouts; and
- BS5837:2012 *Trees in relation to design, demolition & construction - Recommendations*.

### 2.3 Survey Details and Constraints

The original survey was undertaken on the 26<sup>th</sup> January 2019 by the agb Environmental Arboricultural Consultant, in adherence to the principles of BS5837:2012 *Trees in relation to design, demolition & construction - Recommendations*.

A second visit took place on 3<sup>rd</sup> March 2020 by the agb Environmental Principal Arboricultural Consultant, focussing on trees in the vicinity of potential access points. This survey did not record trees in detail, instead focussing on tree density and size.

Tree inspections have been undertaken from ground level using non-invasive techniques only, in accordance with the principles of the Visual Tree Assessment method developed by Mattheck and Breloer (1994).

The original survey obtained data upon five individual trees and two groups. The second survey covered woodland to the south of the site, though not in detail. Trees with a stem diameter below 75mm, when measured at 1.5m above ground level, were not included. The terms used to explain the data recorded are provided in **Appendix 1**.

Comments on tree condition and safety relate to the condition of trees at the time of survey. It should be recognised that tree condition is subject to change in response to a range of factors. This report does not take into account potential extreme climatic events that would be unexpected in this locality (which could include, but aren't restricted to, severe windstorms, floods or drought), or potential outbreaks of pests or diseases.

This report contains work recommendations to manage the risks posed to and by trees responsibly, reducing them to an acceptable level. Even after the recommended work has been carried out some trees could still fail, but it is unlikely that they will cause significant harm unless the weather conditions are extreme and / or there are major hidden defects.

This report considers the potential for trees to influence soil in such a way as to cause the proposed development, or other buildings, to suffer tree related subsidence or heave damage, but does not attempt to quantify this. Operations carried out in the vicinity of the trees, either in the past or future, could affect their health and stability; such operations could include, but aren't restricted to, trenches dug for the installation or repair of utilities.

## 3 Site and Surrounding Area Context

### 3.1 Site Description

The site was a parcel of land to the south-west of Birchwood High School situated in the north east of Bishop's Stortford, Essex. Surrounding land use was predominantly residential to the south and west. Land to the north and east was mainly in agricultural use with the exception of a large area occupied by Stanstead Airport to the north-east.

Pedestrian access was through a gated entrance in the centre of the north-eastern boundary. Parsonage Lane and Dunmow Road comprised the north-east and south-east boundaries respectively. The south-western boundary was made up of Raynham Road, with the north-west boundary comprising Summercroft Primary School, the rear gardens of properties on Friars Wood and Parsonage Lane, and garages belonging to Pearse House.

The site was mainly amenity grass, surrounded by a cyclo-cross track and footpaths, with a storage container located on the south-eastern boundary. It was predominantly flat with no major level changes, with the exception of steep banks along parts of the cyclo-cross track.

### 3.2 Soil Assessment

Information from the Geology of Britain viewer (British Geological Survey, 2018) indicates that the bedrock geology local to the site is London Clay Formation - Clay, Silt and Sand and that local superficial deposits are Lowestoft Formation - Diamicton. Clay soils generally have low volume change potential in response to soil moisture change, possibly resulting from the presence of trees.

An assessment of the soil conditions within the site will be required to inform foundation construction. This assessment must be made by a qualified structural engineer or geotechnical consultant.

### 3.3 Existing Tree Stock Summary

Photographs of trees taken on the second visit are provided in **Appendix 2**. Details of all trees surveyed are provided in the Tree Survey Table in **Appendix 3**, with locations in relation to the site in the Tree Constraints Plan (TCP) in **Appendix 4**.

G2, mixed species, was located around the entire perimeter except for the north-west and north-east corners, which was occupied by G1, mixed species. Both exhibited high levels of public visibility from the two major roads surrounding the site to the south-east and south-west.

The remaining individual trees were located towards the eastern boundary. T1, beech, and T3, birch, to the west of the cycle path in the northern third of the site, were screened from public views by the boundary trees. T2, oak, and T4, horse chestnut, were adjacent to the pavement on Dunmow Road outside the site boundary with high levels of public visibility.

T5, horse chestnut, was a large mature tree located to the west of the cyclo-cross track in the southern third of the eastern boundary. Despite being some distance from the public road it still exhibited moderate levels of public visibility due to its large size and crown spread,

The majority of trees were of moderate quality, Category B. T4, was assessed as low quality, by virtue of its unremarkable form and reduced life expectancy. T1 and T5 were assessed as high quality, Category A, as they were judged to be excellent arboricultural specimens with a life expectancy of over 40 years.

The woodland to the south (only partially covered as G2 within the original survey) was comprised of a mixture of large, mature trees (horse chestnut being frequent) and smaller, multi-stemmed trees, possibly having been coppiced. This area had paths from frequent pedestrian use but was otherwise relatively evenly dense.

## 4 Statutory Tree Protection

It has been confirmed with East Herts Council *East Herts Online Map (2018)* that the site was not located within a Conservation Area. However, an area of woodland to the south-west of the site, labelled as part of G2 within this report, was subject to Tree Preservation Orders (TPO). The status of tree protection can change at any time and should be confirmed with the Local Planning Authority (LPA) prior to any works on the trees taking place.

Where statutory tree protection is in place, this provides the LPA with a degree of control over tree work. Anyone wishing to carry out work to protected trees will need to contact the LPA prior to commencing any work, with the process dependent on the nature of tree protection in place. The presence of statutory tree protection may prevent work that would otherwise be rightfully conducted, such as reducing overhanging branches from a neighbour's tree back to the boundary.

Where trees are subject to TPO, work requires written permission from the LPA. Applications must be submitted using the standard form, normally available from their website or on request. This is treated as a planning application, with a period of public consultation and a visit from an officer. The LPA must normally determine the application within eight weeks, issuing a decision letter. The applicant has a right of appeal if dissatisfied with the decision.

In circumstances where work is required in an emergency, this is exempt from the above process, though anyone carrying out such work should contact the LPA to advise them that this is the case prior to commencing.

If this report is submitted to accompany a planning application, any tree work specified, relating to trees subject to statutory tree protection, will be considered as part of that application. Therefore, if planning permission is subsequently granted, this would normally provide permission for all tree work. Clarification may be sought from the LPA over this.

## 5 Preliminary Development Recommendations

The main recommendations for development are provided in the following section. For ease of reference, it is recommended that this section is cross referenced with the information and plans provided within **Appendices 2, 3 & 4**.

### 5.1 Tree Removals and Reduction

The key tree retention and removal considerations are provided in **Table 5.1**. All trees not listed are considered to be of moderate quality, Category B, and should be retained where possible.

**Table 5.1.** Summary of tree removal and retention priorities.

Feature	Removal and Reduction for Reasons of Condition – Category U	Potential Removals for Reasons of Low Quality – Category C	Priority Trees and Features for Retention – Category A
Trees	T4 horse chestnut	T12, oak. T21, sycamore.	T1 beech T5 horse chestnut
Groups	None	None	None.

Consideration should be given to the larger, collective value of the woodland block, G2, due to its presence within the local landscape, ecological and environmental value.

### 5.2 Development Proposals

Six potential site layouts have been provided. Largely, these are very similar, comprising an artificial sports pitch, pavilion and car park. The main difference between all six options is the access arrangement, which forms the principal focus of this report.

In summary, the access options are as follows:

1. 3141 SD02.1 – entrance access provided from Dunmow Road, via the existing access point for maintenance, approximately one third of the way along the site boundary from the south. Exit provided onto Dunmow Road close to the bus stop about one quarter of the way along the site boundary along the site boundary from the north;
2. 3141 SD02.2 – Entrance access as 3141 SD02.1, from Dunmow Road. Exit provided onto Parsonage Lane via the existing pedestrian access point;
3. 3141 SD02.3 – Entrance access provided through the woodland to the south (G2) from Raynham Road, approximately one quarter of the way along the site boundary from the east. Exit as 3141 SD02.2, onto Parsonage Lane;
4. 3141 SD02.4 – Entrance access as per 3141 SD02.1 from Dunmow Road. Exit also onto Dunmow Road, via a less dense section of G2, approximately one third of the way along the site boundary from the north;
5. 3141 SD02.5 – combined entrance and exit access onto Dunmow Road via the less dense section of G2, approximately one third of the way along the site boundary from the north, with a service road via the existing maintenance access; and
6. 3141 SD02.6 – Entrance access as per 3141 SD02.3 from Raynham Road, exit as per the entrance in 3141 SD02.1 onto Dunmow Road.

### 5.3 Compatibility with Recommendations

The impacts on trees of each option are set out below:

1. 3141 SD02.1 – requires the removal of 4-5 trees from G2 to allow for a widened entrance access, but all are of generally small size and lower value. Requires the removal of a few trees from G2 for the exit, which also will pass over the RPA of offsite oak tree T2. However, the ground level around this tree drops away from the trunk, making use of reduced-dig surfacing more feasible;
2. 3141 SDS02.2 – the same impact for the entrance access as 3141 SD02.1 applies. The exit will require the removal of a large, mature ash tree in G1 with potential bat roost features, along with smaller trees of lower importance. The presence of large, mature trees to either side may mean that their RPAs extend across the proposed access, so could also be at risk;
3. 3141 SD02.3 – the entrance access will require the removal of a large number of trees from the woodland that partially is included in G2. This will not just those affect that directly conflict with the route, but also those in close proximity to the route as the degree of incursion into their RPAs will be intolerable. The creation of a wide break through this woodland block will also increase exposure within the block that could lead to further tree losses during storms for several years following the initial felling. The wide break also affects the woodland's ecological value, fragmenting an otherwise continuous block. The exit access will have the same impact as 3141 SDS02.2;
4. 3141 SD02.4 – the entrance access will have the same impact as 3141 SDS02.1. The exit access will require the removal of a small number of relatively small trees of lower quality within G2. The relatively open nature of this section and its extent allows considerable leeway to locate the access to minimise tree removal;
5. 3141 SD02.5 – The combined entrance and exit location will have the same impact as the exit access for 3141 SDS02.4. The service road will be similar in width to the existing maintenance access, so is unlikely to require any tree removal; and
6. 3141 SD02.6 – The entrance access will have the same impact as the entrance access for 3141 SDS02.3. The exit access will have the same impact as the entrance access for 3141 SDS02.1.

Based upon these impacts, the impact (in terms of tree loss) for each option are considered to be as follows (highest first):

1. 3141 SDS02.3 – large section of G2 and part of G1;
2. 3141 SDS02.6 - large section of G2 and small section of G2;
3. 3141 SDS02.2 – small section of G2 and part of G1;
4. 3141 SDS02.1 - two small section of G2 and the RPA of T2
5. 3141 SDS02.4 - two small sections of G2; and
6. 3141 SDS02.5 – small section of G2 only.

Therefore, it is recommended that option 3141 SDS02.5 is favoured. Options 3141 SDS02.3 and 3141 SDS02.6 should be removed due to the high impact they would have on the woodland to the south.

## 6 Tree Protection and Arboricultural Methodology

The information in this section has been provided for general guidance and consideration when developing the site layout. It does not relate specifically to any individual tree feature or proposed layout. Specific, detailed information will be required to accompany a planning application, delivered via an Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP).

### 6.1 Guidance Utilised

The following guidance documents must be considered when providing the site specific AMS and TPP:

- BS5837:2012 *Trees in Relation to Design, Demolition & Construction – Recommendations*;
- BS3998:2010 *Tree work – Recommendations*; and
- Volume 4 - *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2, 2007).

### 6.2 Tree Works

Tree works should be the first activity on site to prevent accidental damage during clearance / demolition / construction and to enable sufficient vehicular clearance such that the proposals can be implemented.

Tree work is a potentially dangerous occupation. All tree work contractors should be required to provide evidence that they are competent to undertake the required works and are adequately insured. The contractor should also be asked to provide a site-specific risk assessment prior to commencement of any tree works.

Some trees may possess features that increase their potential for use by nesting birds and roosting bats. It is recommended that all tree works take place outside of the main bird nesting season (generally accepted as being March-August inclusive). Where work is required on trees containing cracks, cavities, splits and major (>100mm) dead wood, it is recommended that these features are inspected by a licensed ecologist or bat surveyor prior to work being carried out.

All tree works should be in accordance with BS 3998:2010 *Tree work - Recommendations*.

### 6.3 Tree Protection

#### 6.3.1 Protective Fencing

Following tree works and before any other works commence on site, tree protective fencing shall be immediately installed in accordance with the TPP and specification in **Appendix 5**, signed accordingly with warning notices. By default, it shall be located on the outer edge of the RPA or crown spread, whichever is the greater, except where working space is required within any RPA.

Where working space is required within any RPA, ground protection must be installed to provide appropriate space, with protective fencing located on the outer edge of this ground protection, furthest from the area of development. In circumstances where site constraints

prevent the use of protective fencing, alternative means of protection, such as free-standing plywood boxes round individual trunks, may be considered.

### **6.3.2 Ground Protection**

This may be required in proximity to new buildings and surfaces where the required working space is within the RPAs of retained trees. Where this is specified, ground protection shall be installed in accordance with the TPP and the specification provided in **Appendix 6**. This should comprise a geotextile membrane laid directly onto the ground, followed by a layer of sharp sand or bark of minimum 50mm depth, on which sheets of plywood or similar are laid.

### **6.3.3 Inspection**

Once all protection is in place and before any works commence on site, it is recommended that this be viewed and signed off, by the project arboriculturist. All protection shall be in place during the entire construction phase of the development.

## **6.4 Construction Access / Materials Storage**

Consideration must be given to the impact of all activities on site associated with the development and how they may affect trees. Such activities include, but are not limited to:

- Site access;
- Site compounds;
- Site office buildings, storage buildings and refreshment facilities;
- Contractor parking;
- Materials storage; and
- Mixing and washing areas.

The limitations on materials storage are those given under **General Guidance** in **6.9**.

## **6.5 Provision of New Hard Surfaces and Foundations Within RPAs**

Excavation for foundations and surfaces has potential to lead to root damage and removal, whether accidental or intentional. To minimise such impact, hand or air spade excavation must be used where this is required within any RPA.

Where roots below 25mm diameter are encountered, these shall be cut cleanly using a sharp saw. In the event that roots exceeding 25mm diameter are encountered, no severance must take place without first consulting the project arboriculturist. All excavation and root severance should be supervised by the project arboriculturist.

In the event roots to be retained are exposed during excavation, these must be protected from desiccation using dampened hessian or washed, sharp sand, until such time as the permanent covering is provided. On no account must builder's sand be used as this can contain contaminants that can lead to root death.

Where new foundations are constructed within any RPA, the excavation must be lined with an impermeable membrane to prevent leachate from concrete affecting tree roots.

All foundation and paving design must have due consideration to the present and future presence of trees at their mature size. All structures must be constructed to resist damage

from tree roots, either direct damage from the incremental expansion of roots, or indirect damage arising from soil water removal on shrinkable soils.

The design of all foundations and surfaces likely to be affected by trees must be specified by a suitably qualified structural engineer, with consideration given to the proximity and species of trees, and the surrounding soil conditions.

Where new paving is required within the RPA of retained trees this should be constructed using reduced-dig techniques, minimising excavation. The use of a proprietary three-dimensional cellular confinement system is recommended to ensure continued permeability and accommodate future root expansion. Details are provided in **Appendix 7**.

## **6.6 Service Provision**

All service runs should be designed to avoid any RPA if possible. In the event that services must pass through any RPA, priority must be given to alternatives to excavation, such as thrust boring. If excavation is required, service runs must either be routed to pass through the outer third of the RPA diameter, where root loss is less critical, or if this is not feasible, passing directly beneath the trunk, parallel to the radial spread of tree roots, rather than across it.

All excavation must be carried out using hand tools only, including air spades, with roots above 25mm diameter retained unless approval for removal is provided by the project's arboriculturist.

## **6.7 New Planting**

Construction activities have potential to damage soil conditions through compaction, contamination and inappropriate composition. These factors can impede or prevent the successful establishment of new planting, which may be critical to compensate for tree removal to facilitate development.

The location of all new planting should be determined prior to the development of the Tree Protection Plan, allowing tree protection to be specified that protects all planting locations. In the event that this is not possible, soil remediation measures may be required prior to planting. These may include decompaction and soil replacement. In determining the location of all new planting, consideration must be given to its future relationship with both the development and its function, to maximise long-term tree retention. Locations must be determined that avoid future conflicts over issues such as shade, debris, damage and risk perception, which may generate pressure for tree removal.

Where excavation takes place, or level changes are required, the new soil profile must be appropriate for tree growth, with topsoil limited to the upper layer and subsoil the lower layer. Any new soil must be free of contaminants and of appropriate structure for growth. In general, soils with a higher sand content are more likely to be appropriate.

Species selection should have due regard to the local climatic and soil conditions, being suited to the environment. In general, consideration should be given to species that are already flourishing within the local area, whilst also seeking to increase the resilience of the local tree stock and its ability to contribute towards local biodiversity, green infrastructure and climate moderation.

New planting should take soil conditions and any geotechnical implications into account. It is recommended that a structural or geotechnical engineer review the new planting proposals.

## 6.8 Schedule of Works and Supervision

It is strongly recommended that a full, detailed schedule of works, identifying points at which supervision is required, is provided to facilitate the correct and full implementation of the AMS. This schedule is intended to minimise the potential for development to result in damage to retained trees, providing a logical sequence of works.

Supervision is recommended for key stages where these have greatest potential to result in tree damage if carried out incorrectly. This supervision should be provided by the designated project arboricultural consultant. Following supervision, a photographic report would be presented to the LPA.

The scope and frequency of supervision visits would be determined by the LPA by way of appropriate planning condition.

## 6.9 General Guidance

The following general precautions must also be taken during the construction phase.

- No materials or fuel shall be stored close to or within the RPAs of trees to be retained or where new trees are to be established;
- There shall be no bonfires within 10m of the outer edge of the crown or RPA of a tree to be retained;
- Mechanical equipment must not be refuelled within the RPAs of retained trees or areas where new trees are to be established;
- No cement shall be mixed or stored within the RPAs of retained trees or areas where new trees are to be established;
- Cement mixers must not be washed within or uphill of the RPAs of retained trees or areas where new trees are to be established;
- The soil level within the RPA of a retained tree must not be raised or lowered without the agreement of the local authority Tree Officer;
- No plant shall be operated within the RPAs of retained trees unless the soil is suitably protected against compaction;
- Excavation should not take place within the RPAs of retained trees unless an arboricultural consultant or the local authority Tree Officer is supervising the work;
- The guidance provided by NJUG (2007) should be followed when installing underground services within the RPAs of retained trees;
- Surface water runoff must not be redirected into or out of the RPA of a retained tree;
- No materials shall be dumped within the RPA of a tree, whether in a skip or on the ground; and
- No vehicles shall be parked or operate within the RPA of a retained tree.

## 7 References

British Geological Survey. (2018) *Geology of Britain viewer* [online]. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (Accessed 18<sup>th</sup> May 2018).

East Herts District Council. (2018) *Herts Online Map* [online]. <http://maps.eastherts.gov.uk/eGGP2009/eGGP.aspx?scriptname=PLANNING&scale=1000> (Accessed 17<sup>th</sup> May 2018).

Mattheck, C. and Breloer, H. (1994) *The body language of trees*. London: TSO

National Joint Utilities Group. (2007). Volume 4 *NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees* (Issue 2) [online]. Available at: <http://www.njug.org.uk/document-download/?URL=http://www.njug.org.uk/wp-content/uploads/V4-Trees-Issue-2-16-11-2007.pdf> (Accessed 23<sup>rd</sup> July 2015).

# Appendix 1 Explanatory Notes for Terms Used in Appendices 2, 3 & 4

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## **Tree Number**

Number used to indicate the approximate position on the plan inserted as **Appendix 4**

## **Species**

The species identification is based on visual observations.

## **Age Class**

Sapling or newly established (Y) = a size which could be easily transplanted;

Semi-mature (SM) = prior to seed bearing age and could be transplanted with care;

Early Mature (EM) = of seed-bearing age, may be close to or have achieved mature height, but with considerable apical dominance and lacking a broad, domed crown;

Mature (M) = fully grown, annual growth is much reduced, with a broad, domed crown;

Old Mature (OM) = exceptionally old for the species, possibly starting to decline;

Veteran (V) = often old for the species, the crown may be retrenching or displaying damage, containing features that provide many opportunities for wildlife, likely to offer important habitat.

## **Condition**

The physiological condition of the tree:

Good (G) = normal growth and twig extension showing good vitality, canopy of typical density, with foliage of normal size and colour for the species - no notable indication of ill health.

Fair (F) = reduced twig extension, minor deadwood, but other than that few signs of ill health;

Poor (P) = small internodes and low vitality, the canopy may be thinning and contain dead twigs and/or branches in the outer canopy, discoloured, dwarfed, misshapen or wilting foliage, obvious presence of disease or infection;

Dead (D) = Dead

## **Height**

The height of the tree measured to the nearest metre, or half-metre if below ten metres.

## **Crown Spread**

The distance from the tree trunk to the most relevant of the four cardinal points of the compass, measured in metres.

## **Compass Bearing**

N = north; S = south; E = east; W = west;

### **Crown Clearance**

The existing height of the first significant branch or section of canopy, to the nearest half-metre, to inform on ground clearance, crown/stem ratio and shading.

### **Diameter at Breast Height (DBH)**

Trunk diameter 1.5m above ground level recorded in millimetres measured with a diameter tape. If branches emerge below 1.5m, or if the trunk divides at or close to this height, the trunk diameter will be measured at a different height above the ground and this height will be mentioned. More than one figure indicates that the individual has several stems. Many stems are indicated with an 'M', where it is not possible to determine the number. If the DBH has been estimated this will be marked with an asterix (\*) in the column.

### **PRF**

Potential Roost Features – features that have potential for use by bats for roosting, likely to require further inspection if tree work is required.

### **Category & Remaining Contribution**

The category assessed using the guidance in Table 1 of BS 5837:2012 and the potential for safe tree retention based on the current context.

(A) (light green) Trees of high quality and value: in such condition as to be able to make a substantial contribution (a minimum of 40 years is suggested);

- A1 - Exemplary arboricultural specimens
- A2 - Trees of particular visual importance as arb/landscape features
- A3 - Significant conservation/historical value.

(B) (mid blue) Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested);

- B1 - Might have been A Cat, but downgraded because of impaired condition.
- B2 - Present in numbers - reduced value as individuals but higher as a collective group.
- B3 - Trees with material conservation or other cultural value.

(C) (grey) Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested), or young trees with a stem diameter below 150mm;

- C1 - Unremarkable tree, limited merit/impaired condition.
- C2 - Trees present in groups/woodlands without inferring greater collective value.
- C3 - Tree with no material or other cultural value.

(U) (dark red) Trees in such a condition that any existing value would be lost within 10 years and should, in the current context, be removed under sound arboricultural management.

### **Radius of the RPA**

The radius of a circular Root Protection Area (RPA) in metres as specified using the guidance contained in BS 5837:2012.

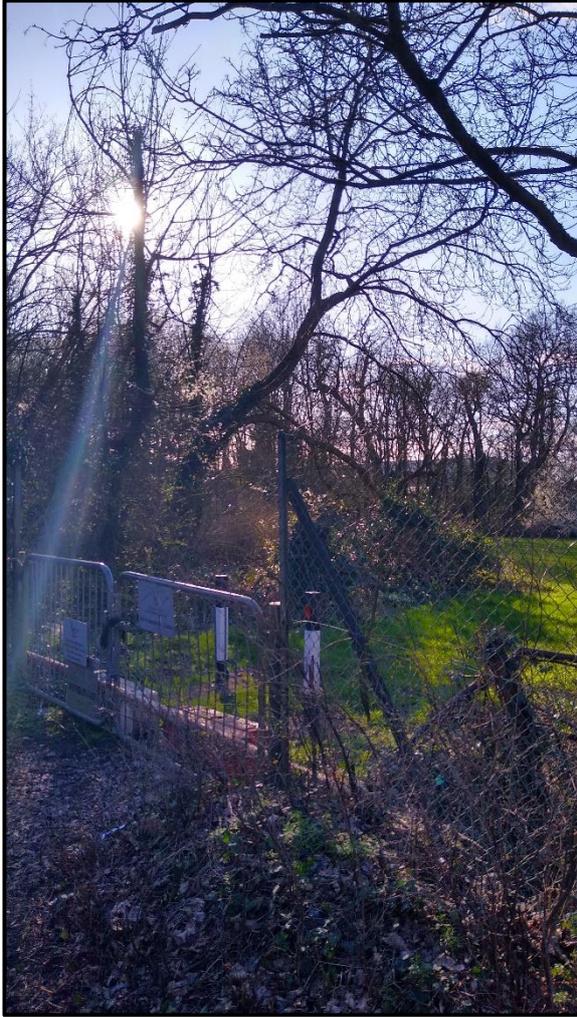
## Appendix 2 Tree Photographs



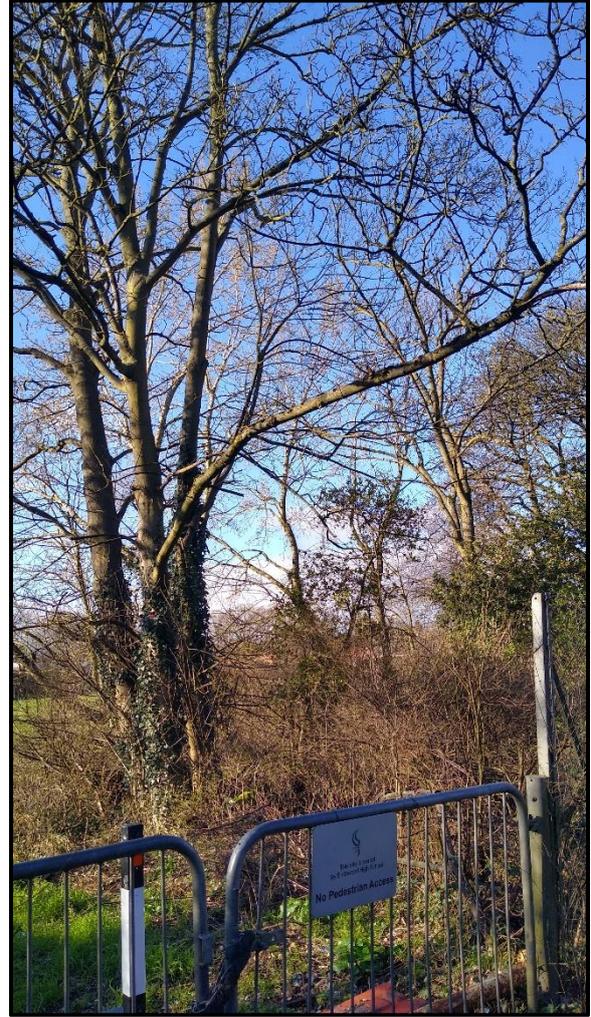
**Photograph 1 (above).** View of the southern edge of woodland, as viewed from Raynham Road, showing dense tree cover.



Photograph 2. Internal view within the southern woodland, showing dense tree cover.



**Photograph 3.** View of the maintenance access on Dunmow Road, showing the current gap between trees and small trees to the south that may require removal if the access is widened.



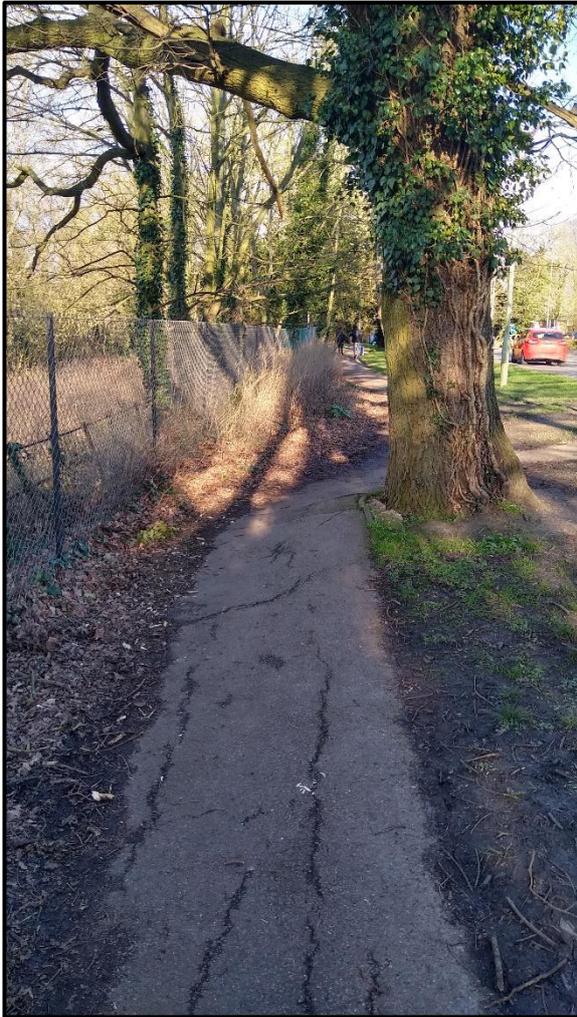
**Photograph 4.** View of the maintenance access on Dunmow Road, showing small trees to the north that may require removal if the access is widened.



**Photograph 5 (above).** View of the more open section of G2 along Dunmow Road, with opportunities for a new access with minimal tree removal.



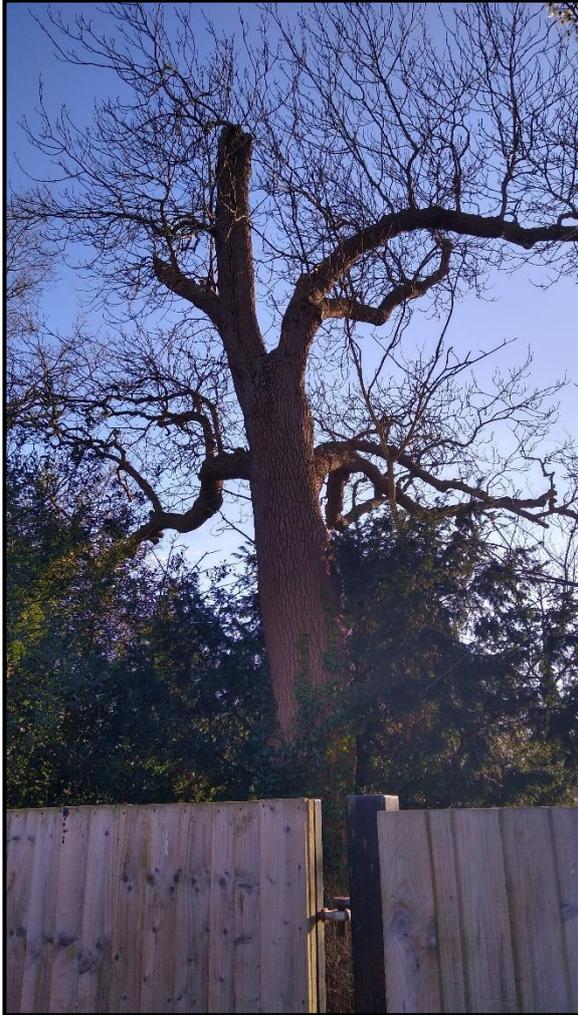
**Photograph 6.** View of the more open section of G2 along Dunmow Road, with opportunities for a new access with minimal tree removal.



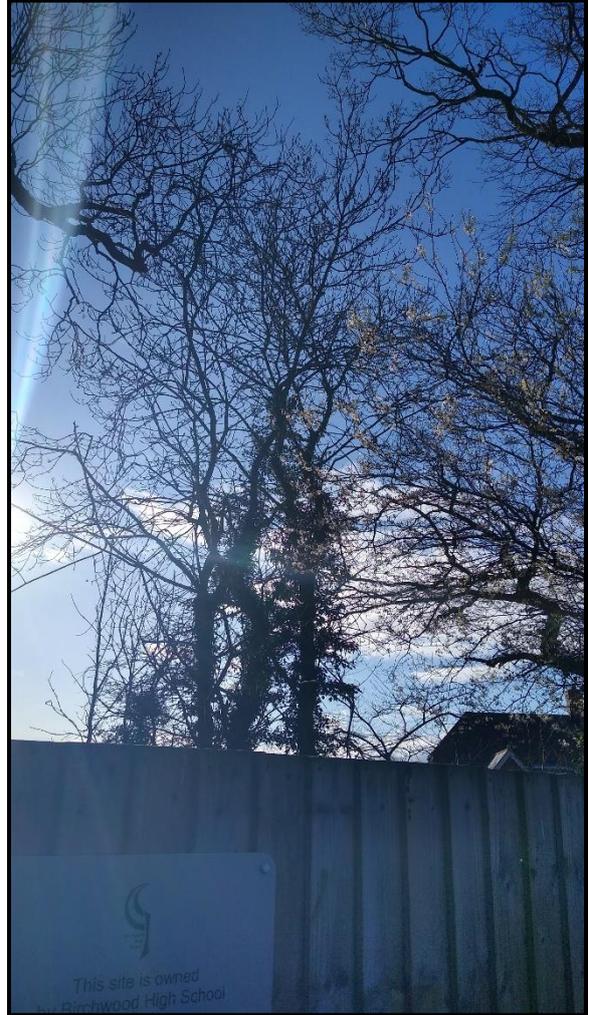
**Photograph 7.** View looking north along Dunmow Road showing the path around T2 and how it drops to the north of the tree, providing scope for the use of reduced dig techniques for a new access.



**Photograph 8.** View of part of G2 just north of T2, showing slightly more open nature of tree cover.



**Photograph 9.** The ash tree in G1 that would need to be removed if the new exit is located here.



**Photograph 10.** Smaller trees close to the potential exit onto Parsonage Lane, which would also require removal.

# Appendix 3 Tree Survey Table

All work recommendations provided in this table are given on the basis of tree condition at the time of the survey and do not relate to any development proposal.

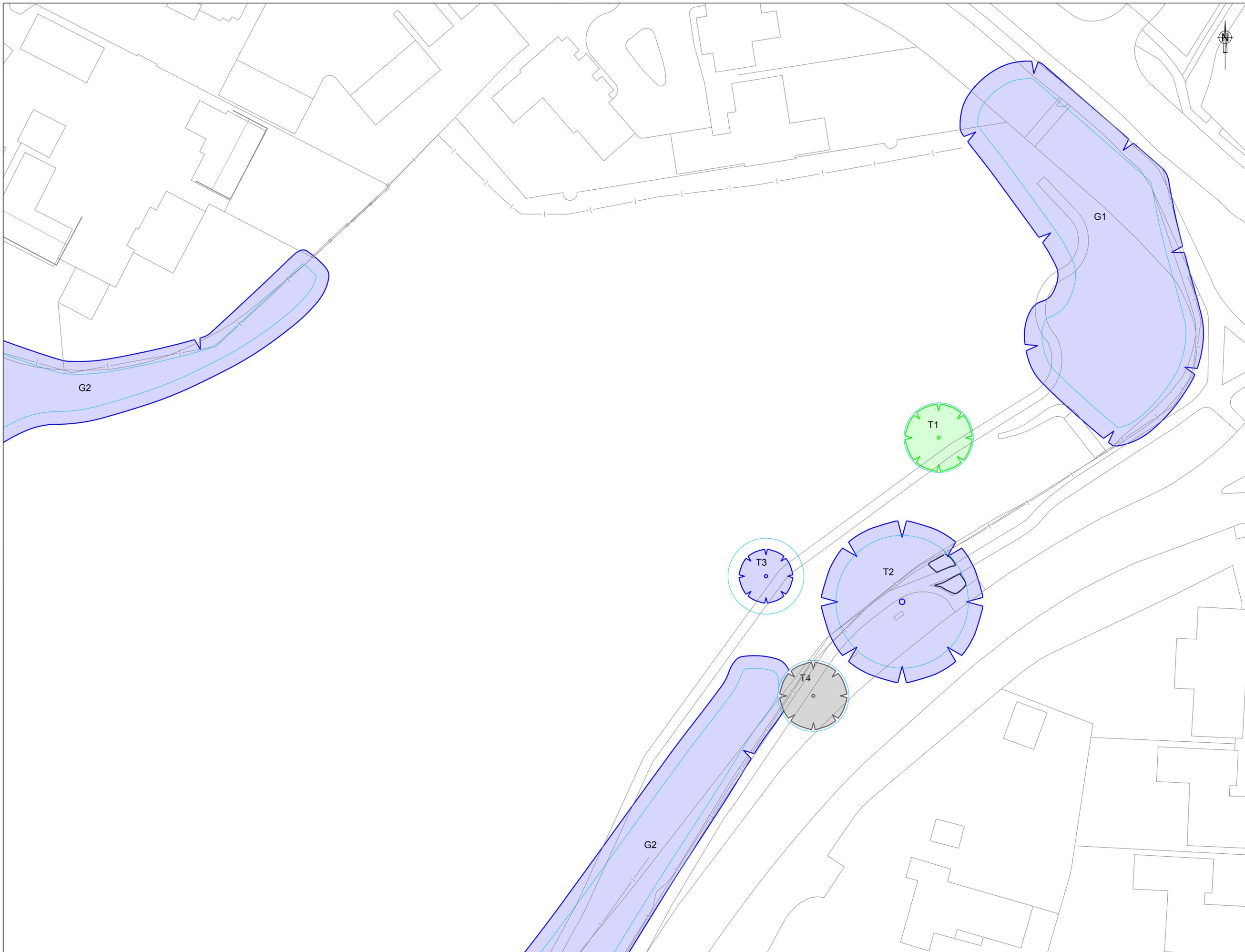
Tree No.	Species	Age	Con	Height (m)	Spread (m)				Crown Clearance (m)	DBH (mm)	Comments	PRF	Recommendations	BS 5837 Category	Remaining Contribution (est.)	RPA Radius (m)
					N	S	E	W								
G1	Oak Ash Yew Sycamore Holly Silver birch	EM M	F G	16 Max.	9	9	9	9	0	520 Max.	Boundary group of generally good extension growth and crown density. Group contained mature birch and oak of large size.	Y	No work recommended.	B2,3	20-40 40+	6.24
T1	Beech	EM	G	11	5	5	5	5	0.5	430	Dominant tree of good extension growth and crown density. All unions normally formed.	N	No work recommended.	A1	40+	5.16
T2	Oak	EM	F	14	1 2	1 2	1 2	1 2	2.0	820	Dominant tree of fair extension growth and crown density. Major deadwood and stubs up to 2m long to the west. Numerous stubs, 80-90mm diameter, up to 2m in length. Ivy up to 8m. Roots pushing up pavement to the west.	N	Crown lift to 2.5m over path. Remove major deadwood and cut ivy at base and re inspect within six months of survey date.	B1	40+	9.84
G2	Elm Ash Sycamore Beech Alder Oak Horse chestnut	EM	F	14 Max.	8	8	8	8	2.0	400 300 Max.	Dominant area of boundary trees, containing some gaps. Generally fair extension growth and crown density.	N	Remove dead trees along cyclo-cross track within six months of survey date.	B2,3	20-40	6.0
T3	Birch	M	G	14	4	4	4	4	0.5	470	Dominant tree of good extension growth and crown density. Single stemmed form. Ridged bark profile, with deep furrows.	N	No work recommended.	B1	20-40	5.64

Tree No.	Species	Age	Con	Height (m)	Spread (m)				Crown Clearance (m)	DBH (mm)	Comments	PRF	Recommendations	BS 5837 Category	Remaining Contribution (est.)	RPA Radius (m)
					N	S	E	W								
T4	Horse chestnut	EM	G	9.0	5	5	5	5	2.5	440	Intermediate tree of fair extension growth and crown density. Unremarkable form. Heavily burred stem with areas of canker formation.	N	No work recommended.	C1	10-20	5.28
T5	Horse chestnut	M	G	16	10	10	10	10	2.0	1180	Dominant tree of good extension growth and crown density. Of large size and highly visibility in the local environment. 50% occluded wounds, 200mm diameter, at 3 & 4m to the west and south-west respectively.	Y	No work recommended.	A1	40+	14.16

\* Indicates estimated value due to access constraints.

# Appendix 4 Tree Constraints Plan

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REV DATE DESCRIPTION

LEGEND

-  Category U
-  Category A  
Trees of high quality
-  Category B  
Trees of moderate quality
-  Category C  
Trees of low quality
-  RPA using formula in accordance with BS5837:2012

Trees categorised in accordance with BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations"

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

LOCATIONS ARE APPROXIMATE

**PROJECT**  
BIRCHWOOD SCHOOL, PARSONAGE LANE,  
BISHOPS STORTFORD CM23 5BD

**TITLE**  
TREE CONSTRAINTS (1 of 3)

**CLIENT**  
BIRCHWOOD HIGH SCHOOL



**agb Environmental Ltd**  
Newmarket Business Centre, 341 Exning Road,  
Newmarket, CB8 6AT  
Tel: 01638 663 226  
Email: info@agbenvironmental.co.uk  
Web: www.agbenvironmental.co.uk

DATE 17/05/18  
SCALE 1:250

PROJECT NUMBER . DRAWING NUMBER  
P3105.1 . 001 revA



REV	DATE	DESCRIPTION
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**LEGEND**

	Category U
	Category A Trees of high quality
	Category B Trees of moderate quality
	Category C Trees of low quality
	RPA using formula in accordance with BS5837:2012

Trees categorised in accordance with BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations"

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

LOCATIONS ARE APPROXIMATE.

**PROJECT**  
BIRCHWOOD SCHOOL, PARSONAGE LANE,  
BISHOPS STORTFORD CM23 5BD

**TITLE**  
TREE CONSTRAINTS (2 of 3)

**CLIENT**  
BIRCHWOOD HIGH SCHOOL



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Web: www.agbenvironmental.co.uk

**DATE** 17/05/18  
**SCALE** 1:250

**PROJECT NUMBER . DRAWING NUMBER**  
P3105.1 . 002 revA



REV	DATE	DESCRIPTION
<b>LEGEND</b>		
	Category U	
	Category A	Trees of high quality
	Category B	Trees of moderate quality
	Category C	Trees of low quality
	RPA using formula in accordance with BS5837:2012	

Trees categorised in accordance with BS5837:2012 "Trees in relation to design, demolition and construction - Recommendations"

The original of this drawing was produced in colour - a monochrome copy should not be relied upon

LOCATIONS ARE APPROXIMATE.

**PROJECT**  
 BIRCHWOOD SCHOOL, PARSONAGE LANE,  
 BISHOPS STORTFORD CM23 5BD

**TITLE**  
 TREE CONSTRAINTS (3 of 3)

**CLIENT**  
 BIRCHWOOD HIGH SCHOOL



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**DATE** 17/05/18  
**SCALE** 1:250

**PROJECT NUMBER . DRAWING NUMBER**  
 P3105.1 . 003 revA

# Appendix 5 Tree Protective Fencing Specification

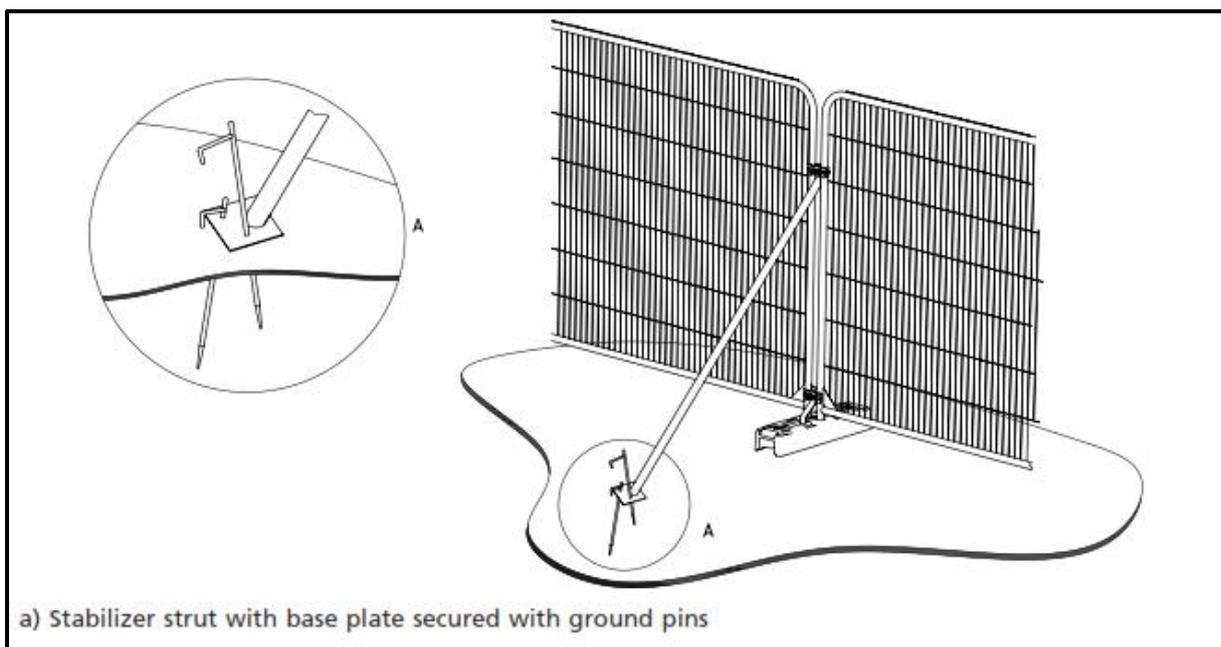
**Specifications:**

Tree Protective Fencing Panels shall be 2.0m high x 3.5m in length. (see image below).



**Tree protective fencing example.**

Given the existing surface onto which the fencing will be placed, it is considered that Heras-type fencing will be most appropriate form of tree protection. The fencing will comprise of continuously joined panels, and will be secured utilising an ‘above ground stabilizing system’, with the fencing base stabilizer strut secured with ground pins with a base plate, as illustrated below:



**Tree protective fencing construction.**

**Location:**

Fencing shall be positioned as far as possible on the perimeter of the Root Protection Area (RPA) to define a Construction Exclusion Zone and will be further identified by 'Tree Protection' warning signs (see image below).



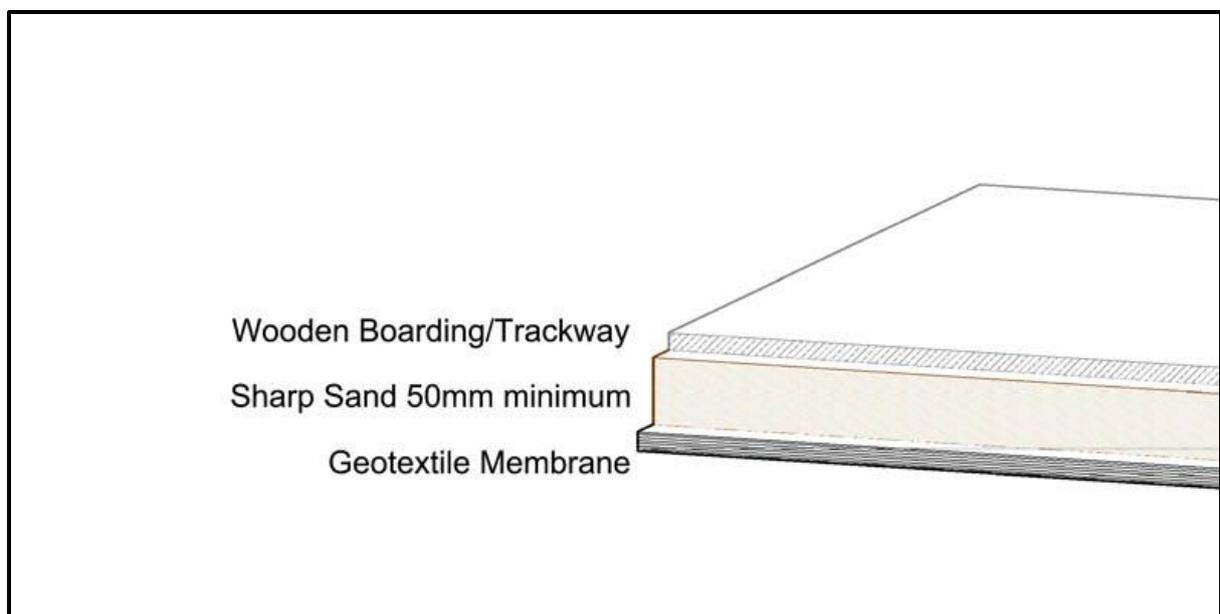
# Appendix 6 Ground Protection Details

## Specifications:

Ground protection should be laid directly onto the existing ground level with no excavation, prior to the commencement of all development, and in accordance with the details provided in the Tree Protection Plan.

Ground protection should be installed as follows:

- A geotextile membrane is laid directly on the soil surface;
- Onto this is laid a minimum depth of 50mm sharp sand, or 100mm bark; and
- Boards or protective trackways are then laid onto the sand/bark layer.



**Ground protection example.**

All ground protection shall remain in place for the duration of all development activities, or until replaced by new permanent surfaces using reduced-dig construction techniques.

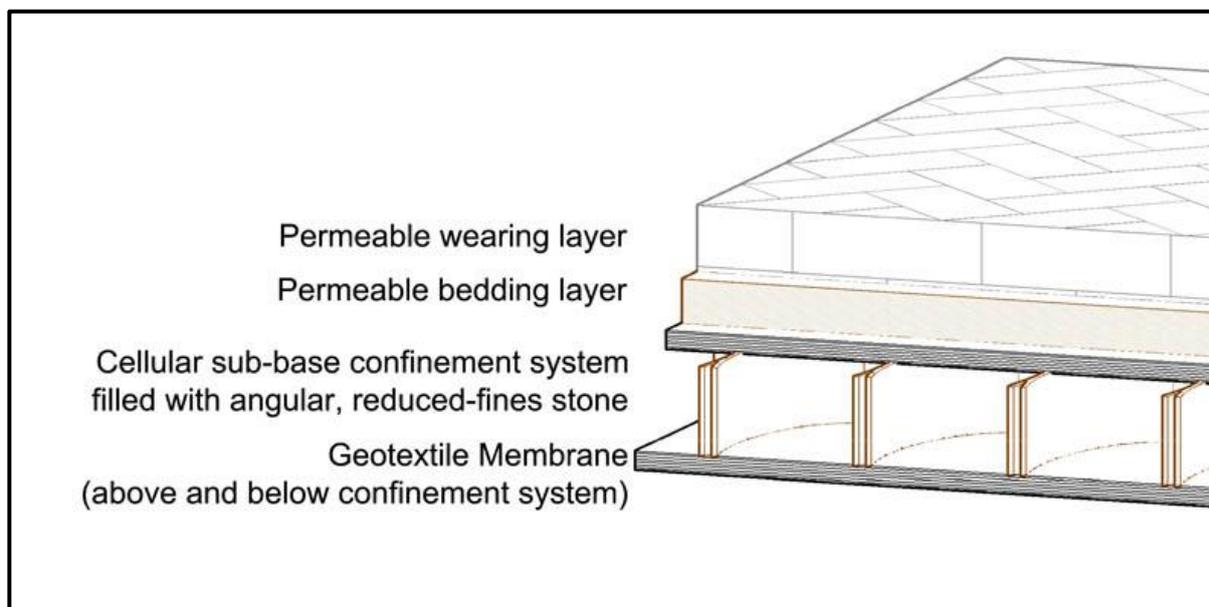
# Appendix 7 Reduced-Dig Construction Details

## Specifications:

All construction should take place at or with minimal excavation of the existing ground level. All excavation should be by hand.

A geotextile membrane should be laid directly on to the ground. Onto this is placed a three-dimensional load-bearing containment system, filled with angular, reduced-fines stone. A second geotextile membrane is laid on top of this, followed by the permeable bedding layer, then the permeable wearing layer forming the visible surface.

The depth of the sub-base, bedding layer and wearing layer may be dependent upon the intended surface use. This should be determined by the project engineer.



**Reduced-dig construction example.**

The use of this technique has four key aims:

- To minimise the extent of root damage through excavation;
- To evenly spread loading to avoid soil compaction beneath the new surface;
- To allow continued flow of water and nutrients, together with gaseous exchange, to roots beneath; and
- To accommodate future incremental expansion of roots and reduce the potential for root related damage to occur.